Vol. 54, pp. 95–108 July 31, 1941

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

INSULARITY IN THE GENUS SOREX ON THE NORTH COAST OF BRITISH COLUMBIA.[1]

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During the summers of 1937, 1938 and 1939 Mr. and Mrs. T. T. McCabe, together with, in the latter year, I. McT. Cowan and P. W. Martin, conducted an extensive reconnaissance of the mammalian inhabitants of certain of the islands off the coast of British Columbia between Queen Charlotte Sound and Dixon Entrance, that is, roughly, between 51° and 54° north latitude.

The field work was devoted primarily to securing specimens of *Peromyscus*, but many other species were obtained, and among these two hundred and eighty-seven shrews. These shrews display certain features of significance in a study of insularity that are reported upon here.

The geologic history, fauna, flora and climatic features of the area are being dealt with fully in the report upon the *Peromyscus* obtained. However, in brief, the inner islands collected upon lie close to the coast, often separated from the continent by straits of a mile or two in width, and seldom more than five or six miles. The outer islands may be twice that distance from the mainland. The climate is mild and excessively humid, rainfall varies from sixty to two hundred or more inches per annum, and snow is almost unknown at sea level. The islands are heavily timbered marginally and sometimes throughout but more often there are large muskegs in the interiors. For the most part the small mammal fauna is confined to the beaches.

So far as has been established the islands were completely glaciated and this until a comparatively recent date. Geologists agree that ten thousand years is probably a useful approximation of the time that has elapsed since the islands and adjoining coast became habitable again.

It is possible that certain of the islands were populated by glacier transported debris containing small mammals. Mountain glaciers descending

[1] A contribution from the British Columbia Provincial Museum.

to salt water must have persisted long after the area in general was inhabited by the reinvading mammal populations. However, our observations tend to support the theory that colonization was by means of the huge rafts of logs and debris that annually slip from the precipitous and water sodden hillsides and float out to sea.

Investigations of the oceanic and in-shore currents and residual surface drift carried out by the International Fisheries Commission (1936) have revealed that the drift is on shore and northward so that there are good chances that many animals cast adrift on these huge rafts find their way to the islands or mainland a greater or shorter distance to the north of the point of origin.

The chances of each individual island receiving a given species would seemingly then vary with the abundance of the species in the forested habitat type providing the material for the land-slide, the set of local winds and currents, the size of the island and its distance from the point of origin of the slide. We have found certain suitable islands that so far as we could determine are still without a mammal population of any kind. The distribution of all the species encountered will be dealt with in another paper.

Measurements are those used by Jackson (1928 : 13) and were taken in the same way.

Collections of shrews were made on the mainland coast at Schooner Passage, Fitzhugh Sound, Koeye River, Neckis River and Lowe Inlet, and on the following islands: Princess Royal, Swindle, Yeo, Pitt, Campbell, Horsfall, Townsend, Smythe, Reginald, Dufferin, Porcher, Banks, Hunter, Spider, Campania, Calvert, Estevan, McCauley, Goose and Hecate. In addition traps were set on Table, Moore, north Estevan and Aristazable islands but no shrews were obtained. While it is difficult to be sure of a negative result we feel reasonably confident that shrews were not present on these islands at the time we trapped there.

Three species of shrews were found by us in the coastal part of British Columbia between latitudes 51° north and 54° north. Of these *Sorex palustris* was taken once only, at Neckis River, on the mainland coast, and not at all on the islands.

Sorex cinereus was not abundant. Specimens were taken at Neckis River on the mainland, and on Princess Royal, Yeo, Pitt, Campbell, Townsend, Smythe, Hunter, and Spider islands. Even where they did occur they were much less abundant than the next species and we were unable to obtain series adequate for a study of geographic variation. Five specimens taken on Pitt Island, nine on Yeo Island, seven on Campbell Island and five on Spider Island, were the largest series obtained. In view of this rarity we can not assume that *S. cinereus* was not present on many of the islands upon which we did not take it. However, sufficient trapping was done on Calvert Island to warrant the assumption that at least until 1939 the species was absent from that island.

Sorex obscurus was next to *Peromyscus*, the most abundant and widespread species of small mammal. It was taken at every trapping station on the mainland and on every island upon which shrews were taken.

On Spider Island we found *Sorex obscurus* and *S. cinereus* but no *Peromyscus*. On Moore, Aristazable and Table islands *Peromyscus* were abundant and shrews apparently absent.

The forty-three specimens of *Sorex cinereus streatori* taken display remarkable uniformity. In this species there is apparently marked change in pelage color during the course of the summer, but wherever series are available we can discern no differences between comparable populations attributable to geographic location. Either this species is of recent arrival upon the islands and has not yet had time to respond to the action of isolation or it is a stable species producing little material for selective influences to segregate. *Sorex obscurus*, however, exhibits several noteworthy variant populations.

The three mainland collecting stations Koeye River, Neckis River and Lowe Inlet are separated by many miles of tortuous, precipitous coast in which several rivers and many extensive inlets penetrate from the humid outer coast climate to a less humid inland climate. The southernmost station, Koeye River, is approximately one hundred and fifty miles in a straight line from Lowe Inlet but in actual coast line distance perhaps six to eight times farther. It is interesting to note, therefore, that a comparison of the series of *S. obscurus* from these three places reveals no significant differences. The Lowe Inlet series averages slightly paler than that from Koeye River, but with this exception the population of the mainland is essentially homogeneous from Rivers Inlet to the Skeena River.

Specimens in the National Museum of Canada from the mainland south of our area at points on Kincome Inlet, Loughborough Inlet and Bute Inlet indicate a gradual transition in this region from the *Sorex obscurus longicauda* type of the coast north of Rivers Inlet to the *S. o. setosus* type of southwestern British Columbia.

In view of the homogeneity found to exist on the mainland coastal area under study I have felt justified in combining the series from the three mainland stations. Figures hereafter stated as representing the mainland population are derived from the combined data of eleven adults of both sexes from Koeye River, eight adults from Neckis River, and seven from Lowe Inlet. The low values of the coefficient of variability shown by the various measured features in this mainland series is further evidence of the homogeneous nature of the sample.

Since the major objective of the field work on the islands was the securing of adequate series of *Peromyscus* the *Sorex* material here reported upon was captured incidentally. For this reason many of the islands are represented by but a small number of specimens and the removal from these small series of the sub-adult individuals leaves too few specimens to be of significance in a study of geographic variation. This is the case with all the islands except Calvert, Banks, Spider, Hunter, Yeo, Smythe, Reginald and Townsend.

On the basis of the material assembled by us it seems possible to divide the shrews of the species *S. obscurus* on the coast and islands of British Columbia between Queen Charlotte Sound and Dixon Entrance into three

geographic races each differing significantly in several features from the inhabitants of adjoining areas. There are also certain insular populations that differ slightly from those inhabiting adjacent land masses but not to a degree, in our estimation, that their designation by a separate subspecific name would serve any useful purpose. We regard these as incipient races, and from the long-time viewpoint, they may well provide useful data on the rapidity with which evolutionary changes take place.

The Mainland population.—Sorex obscurus longicauda. We have not examined either the type or topotypes of *longicauda* in comparison with our series but follow Jackson in applying this name to the mainland coastal population.

Measurements, cranial and external, of this population are given in Table 1.

The winter pelage of *longicauda* as represented by specimens from Koeye River taken July 14, 1939, is the darkest we have seen on any shrew of the species *obscurus*. Ground color of dorsal surface and sides closest to Blackish Mouse Gray with a smattering of silver-tipped hairs and some dull brownish tipping probably the result of wear but possibly intrinsic. Head slightly more brownish; ears Bister and in strong contrast. Underparts Mouse Gray; tail monocolor, somewhat darker than Warm Sepia; feet same as tail. A single male taken October 12, 1938, at Tom Bay, Mathieson Channel, is the only specimen in winter pelage from the northern end of the area. It is paler than the palest of the Koeye River series.

Summer pelage.—Dorsal surface between Clove Brown and Olive Brown, paling slightly on sides and passing abruptly into the color of the underparts which in general effect approximate Hair Brown. Tail bicolor, above between Natal Brown and Bone Brown, paler below; feet same as under side of tail. Lowe Inlet specimens as a series tend to be just perceptibly paler than those from the two more southerly localities.

Shrews that I am unable to differentiate from the mainland type seem to constitute the populations on Goose, Horsfall, Pitt, Princess Royal, McCauley, Chatfield and Dufferin islands. However, in nearly every case the series from these islands are small and it may well be that the acquisition of further material will reveal demonstrable differences between the populations of some of these islands and that of the mainland.

Across Fitzhugh Sound from the mainland locality of Koeye River is Calvert Island. This is a large island, approximately eighteen miles by eight miles in extreme distances. It is heavily wooded for the most part with a central mountain of two thousand feet altitude. Upon this island there is a population of *Sorex obscurus* differing in remarkable degree from that of the mainland.

The summer pelage of the Calvert Island shrews, as represented by ten specimens taken between April 19 to July 14, 1937 and 1939, is much paler than the corresponding pelage in mainland specimens. Here the upperparts are between Saccardo's Umber and Bister; underparts, tail and feet paler, not essentially different from winter pelage except that the tawny wash present in winter is more pronounced in summer. In color of dorsum specimens in summer pelage from Calvert Island are hardly distinguishable

from specimens of *S. o. setosus* from Vancouver, B. C., but the underparts differ in being tawny rather than whitish.

The winter pelage is represented by eight specimens taken between May 18 and June 14, 1937. Dorsal coloration is between Hair Brown and Deep Mouse Gray, very much paler than the corresponding pelage of the mainland population; head and sides slightly more brownish; underparts grayish-white washed with pale buff. The tail and feet of Calvert Island specimens in winter pelage are markedly paler than even the summer color of these members in *longicauda*.

The winter pelages as represented in our series of *longicauda* from Koeye River and Calvert Island shrews from Safety Cove show no overlap and can be picked out with one hundred per cent accuracy from a mixed series. The contrast is almost identical in degree with the color differences in winter pelage between *S. o. obscurus* and *S. palustris navigator*.

External measurements.—Specimens of *Sorex obscurus* from Calvert Island are smaller than *longicauda* and have a shorter tail and smaller hind foot. Actual values for these measurements can be obtained in comparison of tables 1 and 2. The value of P for total length and length of tail is in each instance much less than .01 revealing these differences as significant. Length of hind foot though is less than .02 and only just greater than .01, consequently though the difference is probably significant it can not be demonstrated as positively so on the existing series.

Cranial measurements.—The mean values of all six cranial measurements are smaller on Calvert Island than in *longicauda*. Condylobasal length ($t=6.67$), cranial breadth ($t=4.1$), maxillary breadth ($t=4.75$) and length of maxillary tooth row ($5=5.02$) in each case have a value of P much less than .01 and are significantly smaller in the insular race. Palatal length is possibly significant.

Thus in the nine measured features the shrews of Calvert Island are significantly smaller than *longicauda* in six, and possibly so in another two. This coupled with the outstanding color differences provides an unusually well characterized race isolated on a single island removed from the mainland by a body of water about four miles across. It would be interesting to know the nature of the shrew population on Hecate Island which is separated from Calvert Island by a comparatively quiet channel in places not much over one-half mile in width. Our sole specimen from Hecate Island is smaller and more pallid than any of those taken on Calvert Island.

On Banks Island 120 miles north of Calvert Island we have found a population of *Sorex obscurus* virtually indistinguishable from that of Calvert Island.

In winter pelage the Banks Island shrews are almost if not quite indistinguishable from those of the Calvert Island race. The summer pelage, however, is somewhat paler on Banks Island.

As is the case with the Calvert Island population that of Banks Island is significantly smaller than *longicauda* in the following measured skull features, condylobasal length ($t=9$), palatal length ($t=3.4$), cranial breadth ($t=5.15$), maxillary breadth ($t=5.99$) and length of tooth row

(t=4.74). As may be seen in comparison of tables 1, 2 and 4 the Banks Island shrews have the skulls smaller even than those of the Calvert Island race. This difference, however, is slight and in only one feature, condylobasal length, is it significant.

Banks Island shrews are significantly shorter than *longicauda* with shorter tail and smaller hind foot. In these features they agree closely with the Calvert Island race as also they do in proportion of tail length to body length. This proportion is seventy-six per cent in the Calvert Island shrews, seventy-seven per cent in the Banks Island series, whereas that of *longicauda* is eighty-six per cent.

Strictly on the basis of our series we can differentiate the shrews of Banks Island from those of Calvert Island only on the basis of shorter condylobasal length (there is but one overlapping specimen) and by possibly paler summer pelage. Our series of specimens from Banks Island is, however, very small and with a more adequate sample it might be possible to establish the existence of other differences.

These two closely similar populations inhabit islands separated by over one hundred and twenty miles of turbulent water set with a maze of large and small islands populated by shrews of very different character.

On strictly theoretical grounds this situation is open to several interpretations but most of these are for various biologic reasons extremely improbable.

It is possible that convergent changes from a dark pelaged, long-tailed ancestral colonizing stock of mainland origin have through the years given rise to the present status quo; that the dark pelaged coastal race sponsored by the selective potential of insular isolation has fostered the selection of similar mutations on both islands. The multiplicity of the mutations that must of necessity be involved reflects considerable doubt upon the probability of this explanation being the true one.

On the other hand it would seem more probable that the coastal mainland population has changed genotypically and phenotypically from its original form. Certainly if the reinvasion of the territory subsequent to the ice withdrawal was at all rapid it may well be that the stock that first inhabited the mainland coast differed little from the race we now know as *S. o. obscurus*, itself a relatively stable and adaptable type, and that the more successful race *longicauda* has arisen *in situ* subsequently and has not since been able to establish itself on Banks and Calvert islands. The two insular populations under discussion do indeed bear closer resemblance to *S. o. obscurus* then they do to *S. o. longicauda.*

From this approach it is possible that Banks Island and Calvert Island were colonized at the time the mainland was reinhabited and though their shrew population since then has undergone minor changes these have not yet been of a kind or magnitude to render the two insular populations markedly dissimilar.

A further insular population well differentiated from that of the mainland inhabits Smythe, Townsend and Reginald islands of the Bardswell group.

The summer pelage of this shrew is almost indistinguishable from the

corresponding pelage of *longicauda* but the insular shrews are much browner in winter and lack the blue-black cast of the mainland race.

Furthermore the Bardswell islands' shrew is smaller, with shorter tail and hind foot, the difference in each case being significant. In external measurements this population agrees closely with that of Calvert Island. Like the Calvert population the tail averages seventy-seven per cent rather than eighty-six per cent of body length.

Cranially the Bardswell shrews have condylobasal length and tooth row significantly shorter (P = less than .01). At the same time cranial breadth, interorbital breadth, and maxillary breadth are the same as in *longicauda*. Thus the insular population has a relatively shorter, broader skull.

The Bardswell population differs significantly from the Calvert Island population in greater maxillary breadth and cranial breadth, reflecting a relatively and actually broader rostrum and brain case.

Of the other islands in the Bardswell group we have *Sorex obscurus* from Dufferin and Horsfall. The two specimens from Dufferin, an island separated from Smythe Island by a channel only a few hundred yards wide, are in all respects indistinguishable from *longicauda*. Those from Horsfall, on the mainland side of Dufferin have characters approximately mid-way between *longicauda* and the Bardswell population in respect to externals. Cranially condylobasal length agrees with the latter, palatal length is greater than either and the other measured features are indeterminate.

In addition to the well:differentiated insular populations described above we have found several islands upon which the shrews differ from those on the mainland in one or two features.

In this category is the population on Spider Island and closely adjoining Hunter and Ruth islands. The shrews on this group of islands resemble those on the Bardswells in color, differing from the mainland population (*longicauda*) in much browner winter pelage and in darker summer pelage. In fact this pelage is on these islands the darkest of any taken by us. Total length is much the same in the Spider-Hunter population and *longicauda*, but tail length and length of hind foot are less though not significantly so. The tail is significantly shorter in comparison with body length, tail length is seventy-five per cent of body length on Spider Island, eighty-six per cent in *longicauda*. This difference is the product of the longer body and shorter tail of the Spider Island shrews. They are in these features intermediate between *longicauda* and the Bardswell type. As regards skull measurements the Spider-Hunter population is virtually identical with *longicauda* except in two features, condylobasal length which is less, not significantly so, and interorbital width which is significantly greater. In the first of these the condition is intermediate between the Bardswell shrew and *longicauda* as were departures from the mean of *longicauda* in external measurements. The broad interorbital region, however, is unique.

Of all the insular populations examined Yeo is the sole island upon which the shrews comprising our series are larger, with longer tails than *longicauda*, the differences, however, are small and not significant and the cranial dimensions are identical. Color, too, is indistinguishable from that of

longicauda at least as regards summer pelage. The winter pelage on Yeo Island is not known to us.

The small series of five adults from Campbell Island is externally the same as *longicauda* except that the hind foot is slightly shorter. The winter pelage is unknown. Cranial measurements while not significantly different from those of *longicauda* in any feature have the mean of condylobasal length less and that of palatal length and interorbital breadth greater. This if confirmed by further specimens is a unique departure from the hypothetical parent stock, at least as far as our investigations have taken us.

Our series of seven shrews from West Estevan Island contains but three adults. The measurements of these suggest that the shrew population of this island may constitute a well-marked race, but our material is too meagre to establish this one way or another. Though the number of islands from which any sort of series are available is unfortunately small, we can nevertheless derive some information on the generalities of the results of insular isolation on *Sorex obscurus*. Of the nine measurable characters used in this study length of tail, length of hind foot and condylobasal length of skull are the most prone to vary geographically. The insular populations, where they differ in any important degree, have these features less in size than on the mainland. In no case have we found an insular population with significantly longer tail and longer hind foot than the shrews of the adjoining mainland area. The differentiated insular populations have the tails relatively shorter in comparison with body length. On Spider Island this is not accompanied by shorter body length, but on the Bardswells, Calvert and Banks it is. Actual values for this proportion are mainland eighty-six per cent, Yeo Island eighty-eight per cent, Spider Island seventy-five per cent, Bardswells seventy-seven per cent, Calvert seventy-six per cent, Banks seventy-seven per cent. In general we have found that this shrew living under insular conditions tends to develop shorter body, tail and hind foot and a skull smaller in all features but interorbital breadth. This is stable and in all but one insular population is the same as in the mainland population. On Spider Island, however, interorbital width of the insular population is significantly greater than that of the mainland shrews. Color apparently varies in haphazard fashion.

In the area studied we can find no evidence of change latitudinally.

In the absence of any direct evidence from breeding experiments we must endeavor to determine by other means whether the differences recorded above are genetic or merely the response of the soma of the individual to the environment.

There are several well known cases which might support the latter view. Thus several cervid species are known to respond to insularity by size decrease and by stunting of the preorbital portion of the skull. Huxley (1932) dealt with *Cervus elaphus* in this regard and Cowan (1936) with *Odocoileus*. In both these instances experiment has proven that the size differences at least are not genetic and that the skull differences are at least in large part the result of heterogony.

How these changes are occasioned is not known but in *Odocoileus* on the

coast of British Columbia the intensity of the effect seems to depend on the size of the island. The presence of a natural predator appears to retard or inhibit the reduction in size.

However, if the size differences observed on certain of the islands are the direct result of environmental action upon the soma of each individual it is difficult to account for the presence of differentiated and undifferentiated populations living on islands of identical type separated by but a very narrow water barrier. It is equally difficult to account for the varied pelage colors displayed by the different populations on closely adjoining islands.

Therefore it seems more logical to assume that the observed differences are due to the building up of forms with superior viability under the selective conditions imposed by insular isolation.

The evidence set forth demonstrates the presence in the area under study of three well-characterized forms. One on the mainland coast, for which I am using the name *longicauda* and two unnamed insular races. For the latter I propose the following names.

Sorex obscurus calvertensis, subsp. nov.

Type.—Male adult, number 1947, British Columbia Provincial Museum; taken July 14, 1937, at Safety Cove, Calvert Island, B. C., by T. T. and E. B. McCabe.

Distribution.—Calvert Island and Banks Island, B. C.

Diagnosis.—Smaller, with shorter tail and hind foot and with skull significantly smaller in condylobasal length, cranial breadth, maxillary breadth and length of upper tooth row than corresponding measurements of *longicauda*. Coat color much paler both summer and winter than *longicauda*. For more extended description see above.

Specimens examined.—Calvert Island: Safety Cove 23, Kwakshua 2. Banks Island: Larson Harbour 9.

Remarks.—As has already been stated even our small series from Banks Island differs in two particulars from the Calvert Island population, significantly in condylobasal length and slightly in color of summer pelage. The color differences could conceivably be the result of pelage wear and bleaching. Our Banks Island series also *suggests* that there may be certain other features in which the shrews from this island differ from *calvertensis*. However, the designation of the Banks Island population as a separate race is not justified on the basis of existing material. In the meantime we feel that the assignment of the Banks Island population to *calvertensis* with the admission that it is at least a nascent race, best expresses the status quo and emphasizes the essential similarity existing between the shrews of the species *S. obscurus* occurring on Banks Island and Calvert Island.

Sorex obscurus insularis, subsp. nov.

Type.—Adult female, number 3110 British Columbia Provincial Museum, taken August 24, 1938, on Smythe Island, Bardswell group, B. C., by T. T. and E. B. McCabe.

Distribution.—Smythe, Townsend and Reginald Islands, B. C.

Diagnosis.—Compared with *calvertensis* and *longicauda* winter pelage is brown rather than gray or blackish. Total length, tail and hind foot significantly less than in *longicauda* but not differing from *calvertensis*. Skull of *insularis* is significantly smaller than *longicauda* in condylobasal length and tooth row, and greater than *calvertensis* in maxillary breadth and cranial breadth. A more extended description is given earlier in this paper.

Specimens examined.—Smythe Island 29, Townsend Island 31, Reginald Island 8.

Besides these well differentiated races our collections indicate a race in the nascent state on Spider Island and possibly others on one or two islands from which our material is too scant to be informative.

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TABLE 1—*Sorex obscurus longicauda.*

VARIANT	MEAN	RANGE	STANDARD DEVIATION	COEFFICIENT OF VARIABILITY	NUMBER
Total length	130 ± 1.34	119 – 144	6.54 ± .945	5.04 ± .727	24
Tail	59.8 ± .964	49 – 68	4.88 ± .680	8.20 ± 1.14	26
Hind foot	15.4 ± .153	13 – 17	78 ± .108	5.08 ± .705	26
Condylobasal length	18.6 ± .043	18.2– 19.0	.209 ± .0302	1.16 ± .168	24
Palatal length	7.7 ± .0505	7.4– 8.4	.252 ± .0356	3.28 ± .464	25
Cranial breadth	9.0 ± .0397	8.5– 9.3	.194 ± .028	2.15 ± .311	24
Interorbital width	4.1 ± .0344	3.9– 4.6	.172 ± .0244	4.20 ± .595	25
Maxillary breadth	5.4 ± .0364	5.0– 6.0	.178 ± .0257	3.3 ± .0476	24
Tooth row	7.0 ± .035	6.6– 7.3	.171 ± .0247	2.45 ± .0354	24

TABLE 2—*Sorex obscurus longicauda*—Yeo Island.

Total length	134 ± 1.41	124 – 142	5.47 ± 1.22	4.07 ± .91	10
Tail	63 ± .80	58 – 68	2.53 ± .565	4.02 ± .90	10
Hind foot	15 ± .20	14 – 16	.633 ± .143	4.21 ± .945	10
Condylobasal length	18.6 ± .115	18.0– 19.4	.340 ± .076	1.83 ± .408	10
Palatal length	7.7 ± .0368	7.5– 7.8	.111 ± .026	1.44 ± .340	9
Cranial breadth	9.0 ± .036	8.8– 9.2	.114 ± .025	1.27 ± .284	9
Interorbital width	4.2 ± .083	3.8– .47	.246 ± .058	5.87 ± 1.38	9
Maxillary breadth	5.4 ± .022	5.3– 5.5	.067 ± .016	1.24 ± .292	9
Tooth row	7.0 ± .062	6.6– 7.2	.185 ± .044	2.66 ± .625	9

TABLE 3—*Sorex obscurus calvertensis*—Calvert Island.

VARIANT	MEAN	RANGE	STANDARD DEVIATION	COEFFICIENT OF VARIABILITY	NUMBER
Total length	121.6 ± 1.39	109 – 129	5.01 ± .987	4.15 ± .816	13
Tail	54 ± .487	52 – 58	1.78 ± .351	3.30 ± .650	13
Hind foot	14.7 ± .165	13 – 15	.603 ± .1184	4.10 ± .806	13
Condylobasal length	18.1 ± .048	17.9– 18.4	.152 ± .034	.840 ± .019	10
Palatal length	7.5 ± .043	7.3– 7.8	.147 ± .030	1.97 ± .403	12
Cranial breadth	8.7 ± .057	8.4– 9.0	.179 ± .040	2.06 ± .046	10
Interorbital width	4.0 ± .025	3.9– 4.2	.087 ± .018	2.17 ± .44	12
Maxillary breadth	5.1 ± .047	4.9– 5.4	.161 ± .033	3.16 ± .065	12
Tooth row	6.7 ± .043	6.4– 6.9	.150 ± .031	2.24 ± .046	12

TABLE 4—*Sorex obscurus calvertensis*—Banks Island.

Total length	122 ± .75	117 – 124	1.67 ± .53	1.37 ± .434	5
Tail length	53 ± 1.14	49 – 55	2.55 ± .81	4.84 ± 1.53	5
Hind foot	14 ± .2	13 – 14	.447 ± .142	3.2 ± 1.01	5
Condylobasal length	17.7 ± .053	17.6– 17.9	118 ± .038	.674 ± .213	5
Palatal length	7.3 ± .045	7.2– 7.4	.1 ± .032	1.37 ± .435	5
Cranial breadth	8.5 ± .078	8.2– 8.7	.173 ± .055	2.04 ± .645	5
Interorbital breadth	4.1 ± .09	3.8– 4.4	.2 ± .064	4.88 ± 1.55	5
Maxillary breadth	4.9 ± .028	4.9– 5.0	.063 ± .02	1.29 ± .409	5
Tooth row	6.6 ± .064	6.5– 6.8	.141 ± .045	2.14 ± .68	5

TABLE 5—*Sorex obscurus insularis.*

VARIANT	MEAN	RANGE	STANDARD DEVIATION	COEFFICIENT OF VARIABILITY	NUMBER
Total length	122.3 ± .760	111 – 134	5.37 ± .537	4.41 ± .441	50
Tail length	52.6 ± .358	46 – 58	2.51 ± .251	4.80 ± .480	50
Hind foot	14.6 ± .80	13 – 15	.577 ± .058	3.96 ± .391	52
Condylobasal length	18.2 ± .034	17.7– 18.7	.252 ± .024	1.39 ± .133	55
Palatal length	7.6 ± .241	7.3– 8.0	.178 ± .017	2.34 ± .224	55
Cranial breadth	9.0 ± .028	8.1– 9.3	.208 ± .020	2.32 ± .223	54
Interorbital width	4.1 ± .022	3.7– 4.5	.164 ± .016	4.01 ± .038	55
Maxillary breadth	5.4 ± .021	5.0– 5.9	.154 ± .015	2.86 ± .274	55
Tooth row	6.8 ± .020	6.4– 7.0	.150 ± .014	2.22 ± .212	55

TABLE 6—*Sorex obscurus longicauda*—Spider Island population.

Total length	130.2 ±1.638	120 – 140	5.42 ±1.158	4.1 ± .877	11
Tail length	54.6 ± .968	49 – 59	3.21 ± .684	5.88 ±1.255	11
Hind foot	15.0 ± .159	14 – 16	.548 ± .120	3.66 ± .748	12
Condylobasal length	18.4 ± .059	18.0– 18.7	.204 ± .042	1.11 ± .228	12
Palatal length	7.8 ± .032	7.5– 7.9	.114 ± .023	1.435 ± .294	12
Cranial breadth	9.0 ± .043	8.8– 9.2	1.47 ± .030	1.64 ± .336	12
Interorbital breadth	4.3 ± .029	4.1– 4.4	1.0 ± .021	2.33 ± .476	12
Maxillary breadth	5.5 ± .026	5.4– 5.7	.914 ± .019	1.66 ± .340	12
Tooth row	6.9 ± .049	6.8– 7.4	1.71 ± .035	2.48 ± .506	12